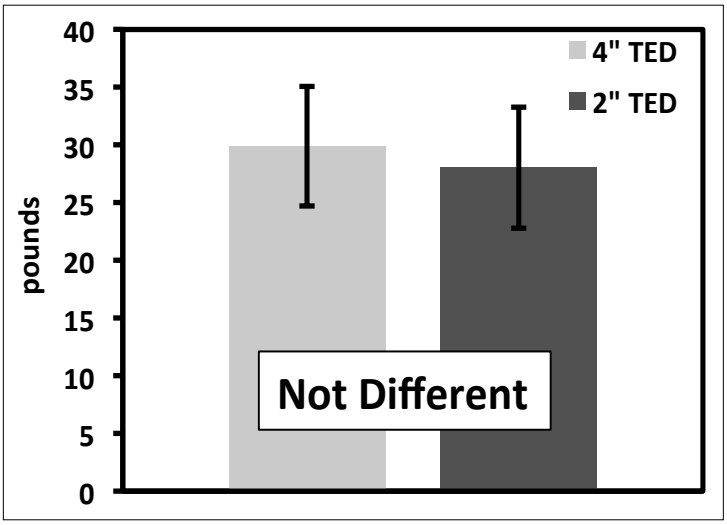

Figure 1: Average shrimp harvest in pounds based on gear.

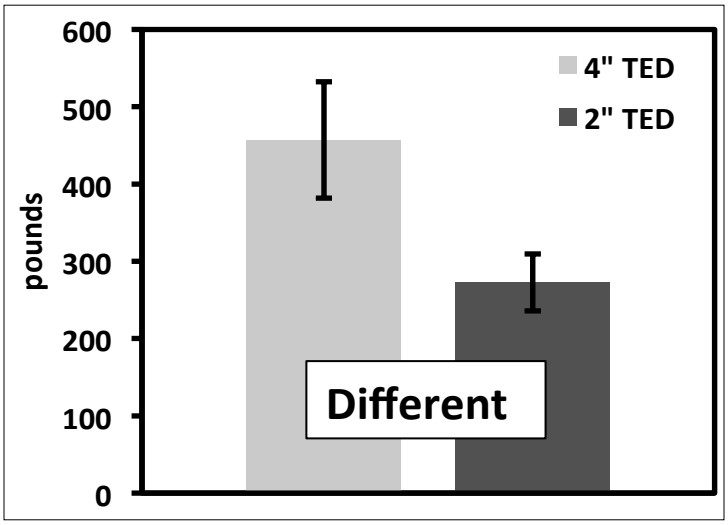

Figure 2: Average bycatch weight in pounds based on gear.

extensions with four identical bullet floats were constructed for each net. New lazy lines constructed out of 5/16-inch poly rope were installed on the nets. Parrish constructed both the 2-inch and 4-inch TEDs used in this study.

Prior to testing, the shrimpers inspected the TED angles and dipped both nets. They checked the geometry of the twin-trawl configuration and adjusted it to ensure that both nets fished on a parallel plane. Twelve pretest tows (both nets equipped with 4-inch TEDs) were conducted in order to confirm that each net fished equally well. During testing, all necessary turns were made to port, and big sweeping turns were used to keep both nets spread as wide as possible to ensure that the nets fished equally as much as possible.

Results

The data indicated that there was no statistical difference in the pounds of shrimp caught by the two TED types. However, the 2-inch TED captured significantly fewer pounds of bycatch, resulting in a lighter tail bag overall than the 4-inch TED. As expected, the 4-inch TED caught significantly more marketable finfish than the 2-inch TED. The figures above report average pounds landed for shrimp harvest (**Figure 1**) and bycatch (**Figure 2**), with ± 95 percent confidence intervals.

Limitations and Recommendations

Average shrimp harvest as a percentage of total weight captured was 10 percent for 2-inch TEDs and 7 percent for 4-inch TEDs, which is lower than percentages seen in other studies (NCDMF, 2012). An operation targeting finfish as well as shrimp might be concerned about the loss of marketable fish from the 2-inch TED. Furthermore, ocean testing was conducted from September to December when mostly white shrimp were available and almost no moss was encountered, such as would be found in the Cape Fear River. Large amounts of moss or other debris could clog a 2-inch TED sooner than a traditional 4-inch TED.

The comparison should be repeated in the summer (June to September) when mostly brown shrimp are available because different style nets are used, and bycatch type and quantity will differ. The testing should be expanded to include smaller vessels and trawls because 75 percent of North Carolina's shrimp harvest comes from inside waters (NCDMF, 2012).

Potential Economic Impact

If the narrower grid shows similar results on other vessels and otter trawl configurations, decreased bycatch could lead to fewer crew hours required to cull the shrimp, as well as less fuel to complete tows. Bycatch reduction may make it possible for trawlers to conduct longer tows. Less bycatch also may lead to higher-quality shrimp (e.g., less crushed shrimp, less culling time before storage) that could command a higher dockside price. Finally, the TED can eliminate large sharks and rays, making the deck safer for the crew.

References

Broome, J. D., J. W. Anderson and D. W. Anderson. 2011. "By-Catch Volume Reduction Through Turtle Excluder Device (TED) Reduced Grid Spacing." Final report, N.C. Fishery Resource Grant Program, 10-FEG-03, available from *www.ncseagrant.org*.

N.C. Division of Marine Fisheries. 2012. North Carolina Shrimp Fishery Management Plan, Draft Revision 2.

TED Regulations. 2008. Title 50, Code of Federal Regulations, Pt. 223.206-207.

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